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CONTRIBUTIONS IN SCIENCE

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THE MACHRIS BRAZILIAN EXPEDITION

BOTANY: Phanerogamae
Amaranthaceae and other families

By Lyman B. Smith and Collaborators

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CONTRIBUTIONS IN SCIENCE is a series of miscellaneous technical papers in the fields of Biology, Geology and Anthropology, published at irregular intervals by the Los Angeles County Museum. Issues are numbered separately and numbers run consecutively regardless of subject matter. Number 1 was issued January 23, 1957. The series is available to scientists and scientific institutions on an exchange basis. Copies may also be purchased at a nominal price.

The MACHRIS BRAZILIAN EXPEDITION from the Los Angeles County Museum was sponsored by Mr. and Mrs. Maurice A. Machris and Mrs. Maybell Machris Low. It was conducted under the auspices of the Museu Nacional do Brasil. Botanical and zoological collections were made from April through June, 1956, in the region of the headwaters of the Rio Tocantins in the state of Goiás. General accounts and intineraries are given in papers 1 and 2 of this series. Technical type specimens of new entities are deposited in the Museu Nacional in Rio de Janeiro.

Hildegarde Howard
Editor

E. Yale Dawson
Associate Editor

THE MACHRIS BRAZILIAN EXPEDITION

BOTANY: Phanerogamae, Amaranthaceae and other families

By LYMAN B. SMITH[1] AND COLLABORATORS

The plant collections reported upon below were obtained by E. Yale Dawson, Expedition Botanist, and are cited by his field collection numbers. Detailed locality data for these may be found in his general account of the botany of the Expedition[2]. Briefly, however, specimens bearing numbers from 14133 to 14815 came from the Chapada dos Veadeiros, between São João da Aliança and Veadeiros, April 13 - May 3, 1956. Those bearing numbers from 14816 to 15236 came from the region between Amaro Leite and Peixe, especially in the southern Serra Dourada, May 15-June 10, 1956.

The present report contains several supplements to previously noted families because a number of specimens were overlooked or misfiled in the original sorting into groups for specialists.

The families are arranged alphabetically. The treatments are by L. B. Smith unless otherwise indicated.

The first set of specimens, including isotypes of the four new species, is deposited in the Los Angeles County Museum.

AMARANTHACEAE

Alternanthera brasiliana (L.) O. Kuntze 14936 Southern Mexico and the West Indies to Brazil.

Alternanthera ficoidea (L.) R. Br. 14533 Tropical America.

Amaranthus spinosus L. 14970 Worldwide in tropical and temperate regions.

Pfaffia aff. *sericea* (Spreng.) Mart. 14663 Specimen incomplete.

References: M. Seubert in Mart. Fl. Bras. 5(1): 161-252. 1875. P. C. Standley in North American Flora 21, pt. 2: 95-169. 1917.

APOCYNACEAE (supplement)

Aspidosperma macrocarpon Mart. 15233 Venezuela, Brazil, Paraguay, Bolivia.

Reference: Robert E. Woodson, Jr., Ann. Missouri Bot. Gard. 38: 119-206. 1951.

ARACEAE

Anthurium aff. *kunthii* Poepp. & Endl. 15069

Caladium bicolor (Ait.) Vent.? 14755 Sterile material. The corm used as a tonic and to purify the blood; called "inhame roxo."

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[1] Curator, Division of Phanerogams, U. S. National Museum, Smithsonian Institution, Washington, D. C.

[2] Dawson, E. Yale. 1957. The Machris Brazilian Expedition. Botany: General. Los Angeles Co. Mus. Contr. Sci. (2): 1-20.

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Monstera pertusa (L.) de Vriese 15010 Tropical America.
Philodendron bipinnatifidum Schott? 14412 Leaf only.
Philodendron aff. *eximium* Schott 14637; 14917; 14992
Philodendron aff. *laciniatum* (Vell.) Engl.? 14509 Leaf only.
Spathiphyllum cannifolium (Dryand.) Schott 15135 Tropical South America.

References: A. Engler in Mart. Fl. Bras. 3(2): 25-224. 1878. Pflanzenreich IV. Fam. 23, pt. A: 1-70. 1920; pt. B: 1-330. 1905; pt. B^2: 1-160. 1908; pt. C: 1-130. 1911; pt. Da: 1-134. 1912; pt. Db: 1-143. 1913; pt. Dc: 1-78. 1915; pt. E: 1-139. 1920; pt. F: 1-274. 1920. The Brazilian species of the family are under revision by Dra. G. M. Barroso of the Jardim Botânico, Rio de Janerio.

BURSERACEAE

det. by J. Cuatrecasas, Division of Phanerogams,
U. S. National Museum, Smithsonian Institution,
Washington, D. C.

Protium dawsonii Cuatr. sp. nov. Figs. 1, 2

Arbor ramis terminalibus leviter striatis brunnescentibus vel cinerascentibus densiuscule pubescenti-hirtulis pilis tenuibus patulis ad 0.5 mm. longis.

Folia alterna imparipinata 8-17 cm. longa, 1-3-juga, petiolo rigido robusto supra fere plano subtus semitereti striolatoque utroque latere angulato 3-4 cm. longo utrinque dense pubescenti-hirtuli, pilis patulis; internodiis rhachis 1.5-2.5 cm. longis pubescenti-hirtulis, supra bicanaliculatis subtus semiteretibus. Petioluli laterales breves robusti patulo-pilosi supra bisulcati, 1-2 (-3) mm. longi, terminalis 7-12 mm. longus. Foliola firmule coriacea ovata vel lanceolato-ovata basi (praeter terminalium) plus minusve asymmetrica subcordata vel late rotundata, apice breviter attenuata et obtusiuscule acuminata, margine levissime sinuato-dentata vel integra, 3.5-8.5 cm. longa, 1.8-5.2 cm. lata, acumine ad 5 mm. longo 3 mm. lato; supra visu glabra sed pilis sparsis teneris acutis patulis ad 0.5 mm. longis munita costa angusta prominula lutecenti nervis lateralibus prominulis discoloribus bene conspicuis reliqua superficie laevi pallide viridi; subtus tactu mollia pilis patulis teneris plus minusve copiosis munita, pallide viridia costa crassiuscula pallida magis pilosa nervis secundariis circa 10 utroque latere prominentibus pallidis valde conspicuis subpatulis marginem versus furcato-evanescentibus nervulis minoribus parum conspicuis superficie laevis.

Inflorescentiae axillares breves paniculatae 1-2 cm. longae axi brevissimo vel nullo ramulis angulosis robustiusculis pubescenti-hirtulis. Bracteae ovato-triangulares crassae acutiusculae amplectentes 1.5-1 mm. longae minute pubescentes. Pedicelli 1-2.5 mm. longi crassiusculi angulati patulo-

pubescenti. Flores visu hermaphroditi tetrameri. Calyx cupularis circa 1 mm. altus, breviter 4-dentatus dentibus acutis, extus sparse patulopilosus. Petala 4, crassiuscula oblonga sursum paulo angustata subacuta apice crassiuscule breviterque acuminato-inflexa, 2.2-2.4 mm. longa, 1.2-1.3

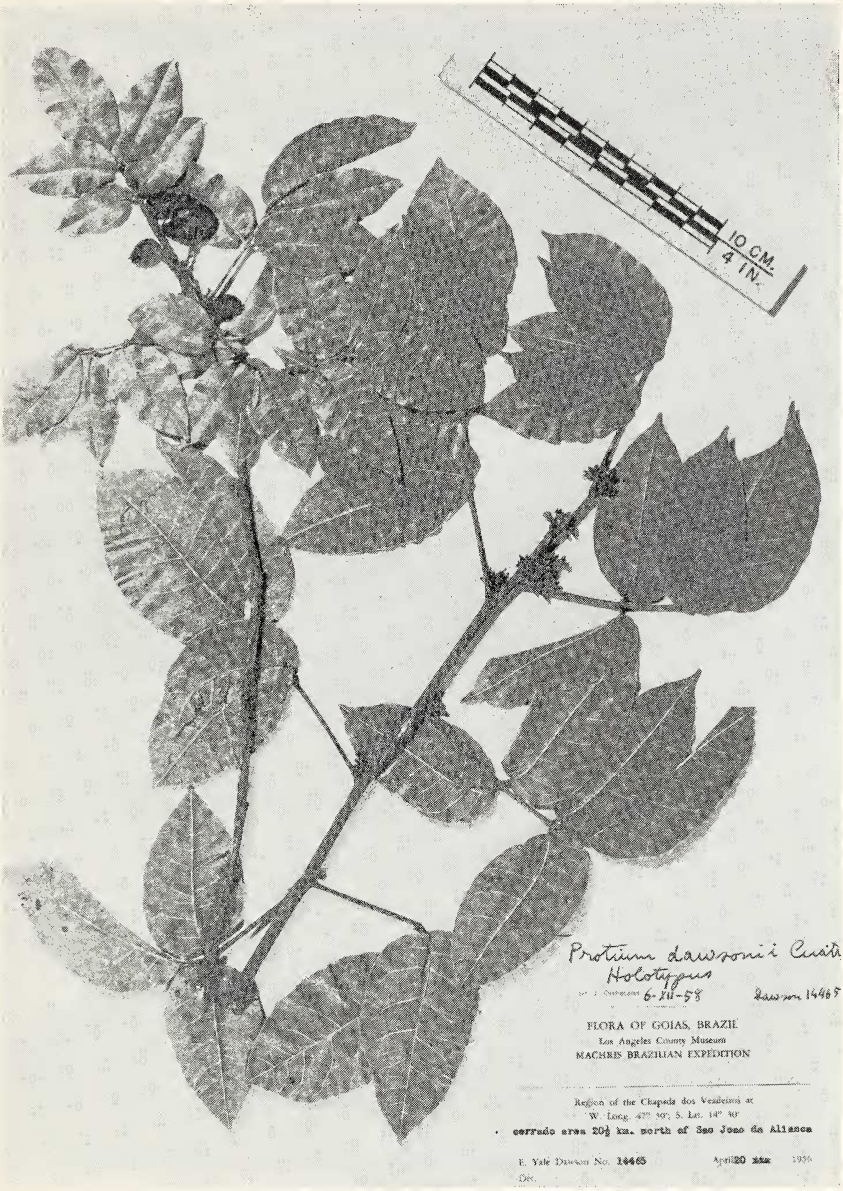

10 CM.
4 IN.
Protium dawsonii Cuatr
Holotypus
6-XII-58
Dawson 14465
FLORA OF GOIAS, BRAZIL
Los Angeles County Museum
MACHRIS BRAZILIAN EXPEDITION
Region of the Chapada dos Veadeiros at
W. Long. 47° 30', S. Lat. 14° 30'
cerrado area 20½ km. north of Sao Joao da Alianca
E. Yale Dawson No. 14465
April 20 1956

Fig. 1. *Protium dawsonii* sp. nov. An isotype specimen.

mm. lata extus pilis crassiusculis irregularibus copiosis intus papillosa ad marginem tomentella. Stamina 8, filamentis complanatis crassiusculis glabris quatuor oppositisepalis brevioribus circa 0.8 mm. longis quatuor oppositipetalis; antheris linearibus lanceolatis 0.5 mm. longis verisimiliter sterilibus. Ovarium glabrum ovoideum circa 0.7 mm. altum apice attenuatum in stylum crassiusculum erectum circa 1.5 mm. longum. Stigmata crasse capitata 4-lobata. Discus crassus annularis leviter octogonus. Ovarium 4-loculare loculis biovulatis. Fructus pedicelatus calyculatusque, pedicello 2-3 mm. longo angulato patulo-pubescenti. Drupa valde asymmetrica ovata apice plus minusve angustata acuta cum stylo persistenti apiculata basi subite in pseudopedicellum attenuata unipyrena siccitate 11-14 mm. longa pseudopedicello (1.5-2 mm.) excluso; exocarpio carnoso 1 mm. crasso; endocarpio oblongo-ellipsoideo leviter compresso cartilagineo utrinque obtuso.

TYPE: Museu Nacional do Brasil, Rio de Janeiro, collected in cerrado area 20½ km. north of São João da Aliança, region of the Chapada dos Veadeiros at W. Long 47°30'; S. Lat. 14°30', Goiás, Brazil, April 20, 1956, by E. Yale Dawson (No. 14465). Isotypes in the United States National Museum and the Los Angeles County Museum.

Another collection from the same region is *Dawson* 14263 (US), hilly cerrado, 23 km. north of São João da Aliança, April 16, 1956.

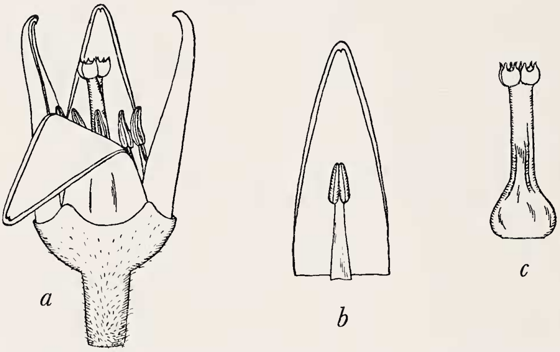


Fig. 2. *Protium dawsonii* sp. nov. a. Flower, × 10; b. petal and stamen, × 10; c. pistil, × 10.

Protium dawsonii is closely related to *P. almecega* March. from Lagoa Santa in Minas Gerais and to *P. llanorum* Cuatr. from Los Llanos of Venezuela and Colombia. The Dawson plant differs from the above mentioned species by its short and strong petiolules, by the spreading indument of the petioles, rhachises, and branchlets, by the broadly ovate basally subcordate or rotundate leaflets, by the tetramerous flowers, by the outwardly puberulous petals, and by the long style.

CYPERACEAE

Bulbostylis junciformis (H.B.K.) Lindm. 14622 Cuba, British Honduras, Panama, northern South America.

Bulbostylis paradoxa (Spreng.) C. B. Clarke 14496 Cuba, Panama, northern South America.

Bulbostylis scabra (Presl) C. B. Clarke 14887; 14277 (pathological); 14670 (lax variety). Southern Brazil, Paraguay, northern Argentina.

Bulbostylis sphaerocephala (Boeckl.) C. B. Clarke 14134 Southern Brazil, Bolivia, Paraguay, northern Argentina.

Bulbostylis sp. 14146; 14555 Spikelets fascicled in an ample diffuse panicle.

Bulbostylis sp. 14403 Inflorescences subcorymbose; spikelets in subglobose heads.

? *Bulbostylis* sp. 14636 Inflorescence subumbellate; spikelets large, solitary.

Cyperus amabilis Vahl 14635 Pantropical.

Cyperus flavus (Vahl) Nees 14233 Tropical and temperate America.

Cyperus haspan L. 14242; 14913 Pantropical.

Cyperus simplex H.B.K. 14935 Tropical America.

Eleocharis capillacea Kunth 14745 São Paulo and Minas Gerais to Paraguay.

Eleocharis nana Kunth 14248; 14260a Florida, Cuba, British Guiana, Brazil.

Eleocharis sulcata (Roth) Nees 14911 Mexico to Argentina.

Eleocharis sp. 14260

Fimbristylis dichotoma (L.) Vahl. (*F. annua* R. & S.) 14257 Cosmopolitan.

Fuirena umbellata Rottb. 14876 Pantropical.

Lagenocarpus kunthii (Miq.) Uitt. [*L. strictus* (Kunth) Pfeiffer] 14603; 14710 Colombia, Guiana and Bahia to Rio Grande do Sul. New to Goiás.

Lagenocarpus rigidus (Kunth) Nees 14689 Minas Gerais. New to Goiás.

Lagenocarpus tenuifolius (Boeckl.) O. Kuntze. 14773 Minas Gerais, Goiás.

Lipocarpha sellowiana Kunth 14237 Brazil, Bolivia, Paraguay, Uruguay, Argentina.

Rhynchospora brevirostris Griseb. 14480; 14886 Cuba to São Paulo and Mato Grosso. New to Goiás.

Rhynchospora cephalotes Vahl 14961 Viviparous. West Indies to Goiás and Mato Grosso.

Rhynchospora aff. *confinis* (Nees) C. B. Clarke 14633 Inflorescence lax.

Rhynchospora consanguinea (Kunth) Boeckl. var. *speciosa* (Kunth) Boeckl. 14241 Pará, Minas Gerais, Goiás.

Rhynchospora emaciata (Nees) Boeckl. (*R. tenuis* var. *emaciata* Lindm.) 14874; 14882 Amazonas and Bahia to Rio Grande do Sul, Argentina, and Bolivia.

Rhynchospora exaltata Kunth 14453 Brazil, with varieties in Guiana and Paraguay.

Rhynchospora glauca Vahl 14877 Pantropical.

Rhynchospora globosa (H.B.K.) R. & S. 14236; 14875 West Indies to Uruguay and Argentina.

Rhynchospora hirta (Nees) Boeckl. 14289 Pará to São Paulo, Goiás, and Bolivia.

Rhynchospora pilosa (Kunth) Boeckl. 14634 Bahia, Minas Gerais, Paraná. New to Goiás.

Rhynchospora sp. 14878 Pathological, no fruit.

Scleria hirtella Sw. 14235 Southeastern United States to Bolivia, Paraguay, and Uruguay; southern Africa.

Scleria melaleuca Reichb. ex Schlecht. & Cham. 15124 Southern Mexico and the West Indies to Brazil and Bolivia.

Scleria minima C. B. Clarke ex char. 14783 Goiás; Amazonas.

Scleria secans (L.) Urban 14960 Mexico and the West Indies to Bolivia and Paraguay.

Scleria verticillata Muhl. 14630 Eastern Canada to Guiana and Pará. New to Goiás.

Scleria sp. 14910

References: M. Barros, Gen. & Sp. Pl. Argentinarum 4(1): 3-243. 1947; (2): 259-530. 1947. H. K. Svenson, North American Flora 18(9): 505-556. 1957. H. Uitten, Fl. Surinam 1: 72-149. 1934. *Cyperus*: G. Kükenthal, Pflanzenreich IV. Fam. 20 (Heft 101): 1-671. 1935-36. *Lagenocarpus*: H. Pfeiffer, Fedde Rep. Spec. Nov. 18: 72-93. 1922. *Rhynchospora*: G. Kükenthal, Engler Bot. Jahrb. 74: 375-509. 1949; 75: 90-126, 127-195, 273-314. 1950-51. *Scleria*: E. L. Core, Brittonia 2: 1-105. 1936.

DIOSCOREACEAE

Dioscorea sp. 14908 Staminate flowers only.

Reference: R. Knuth, Pflanzenreich IV. Fam. 43: 1-387. 1924.

DROSERACEAE

Drosera montana St.-Hil. var. *montana* 14883 Minas Gerais; Bolivia.

Drosera montana St.-Hil. var. *tomentosa* (St.-Hil.) Diels 14650 Minas Gerais.

Both the above identifications are uncertain because the material lacks mature seeds.

Reference: L. Diels, Pflanzenreich IV. Fam. 112: 1-136. 1906.

ICACINACEAE

det. by Richard A. Howard, Arnold Arboretum,
Harvard University, Cambridge, Mass.

Emmotum nitens (Bentham) Miers 14586 Bahia, Minas Gerais, Goiás, Mato Grosso. The type of this species is *Gardner* 3309, collected in Goiás without specific locality. The present collection is the first to give a definite locality within the state.

IRIDACEAE

det. by Robert C. Foster, Gray Herbarium,
Harvard University, Cambridge, Mass.

Cypella sp. 14791 Almost certainly an undescribed species.

Sisyrinchium vaginatum Spreng. 14183a Southern Brazil, Uruguay, Paraguay, Argentina.

Trimezia sp. 14777 Belongs in the *Lansbergia* group, members of which are virtually impossible to name at the present time.

LAURACEAE

Ocotea sp. 14447

References: C. Mez, Jahrb. Bot. Gart. Berlin 5: 1-556. 1889. Ida de Vattimo, Jardim Botânico, Rio de Janeiro.

LENTIBULARIACEAE (supplement)

Utricularia neottioides St.-Hil. 14675 On rocks in running water below falls 14 km. south of Veadeiros in sandstone area.

Reference: N. Sylvén, Arkiv Bot. 8(6): 1-48. 1908.

LORANTHACEAE

Phoradendron emarginatum Eichl. 14476 Amazonas to Bahia; Bolivia.

Phoradendron undulatum (Pohl) Eichl. 14373 Minas Gerais, Rio de Janeiro; Bolivia.

Psittacanthus biternatus (Hoffmsegg.) Blume 14607 Pará, Bahia; southern Venezuela.

Psittacanthus robustus Mart. 14261; 14454 Central and southern Brazil.

Struthanthus aff. *dichotrianthus* Eichl. 14565 In fruit, diagnostic parts lacking.

Struthanthus flexicaulis Mart. 14262 Minas Gerais, São Paulo.

References: A. G. Eichler in Mart. Fl. Bras. 5(2): 1-136. 1868. W. Trelease, The Genus Phoradendron 1-224. 1916. C. T. Rizzini, Jardim Botânico, Rio de Janeiro.

OCHNACEAE

Ouratea castaneifolia (DC.) Engler 14719 Amazonas and Mato Grosso to Piaui and Rio de Janeiro.

Ouratea floribunda (St.-Hil.) Engler 14436; 14830 Minas Gerais, São Paulo. The second number has the inflorescence heavily infected with a witches broom that is frequent in this genus.

Sauvagesia erecta L. 14903 Weed of tropical America and Africa.

References: A. Engler in Mart. Fl. Bras. 12(1): 297-366. 1876. E. Gilg, Pflanzenfam. ed. 2, 21: 53-87. 1925.

RHAMNACEAE

Gouania virgata Reiss. 14484 Minas Gerais; Guiana, Nicaragua.

Reference: S. Reissek in Mart. Fl. Bras. 11(1): 81-120. 1861.

ROSACEAE

det. by Bassett Maguire, New York Botanical Garden,
New York, N. Y.

Hirtella burchellii Britton 15130 Hitherto *H. burchellii* has been known only by the type *Rusby* 1222 from Beni River, Bolivia (type and isotype NY), and according to Britton, by *Burchell* nos. 6331, 6416, and 6571. Urban (Fl. Brasiliensis 1, pt. 1: 10) indicates that all three came from the vicinity of the city of Goiás.

Hirtella racemosa Lam. sens. lat. (*H. americana* Aubl., not L.) 14270 This collection apparently must be referred to *H. racemosa* var. *gracilipes* Hook. f., which is rather widespread in the central Brazilian plateau region. This variant is quite similar to *H. brachystachya* Spruce ex Hook. f. of the middle Amazon and Rio Negro region.

Licania sp. 14812 This collection may represent an undescribed species, but because of the plethora of species of uncertain application in this complex genus, I hesitate at this time without adequate further exploration of its taxonomy, to propose a new name in *Licania*.

SAPINDACEAE

Cupania vernalis Camb. 14363 Southern Brazil, Bolivia, Paraguay, Uruguay, northern Argentina.

Serjania erecta Radlk. 14232; 14467 Minas Gerais, Goiás, Mato Grosso, São Paulo; Paraguay, Argentina.

Serjania aff. *glabrata* H.B.K. 14431 (fruits lacking).

Serjania mansiana Mart. 14396 Paraná, São Paulo, Minas Gerais to Bolivia.

Serjania or *Paullinia?* 14923 (fruits lacking).

Urvillea ulmacea H.B.K. 14386 Texas, Mexico, and the West Indies to Bolivia, Paraguay, and Argentina.

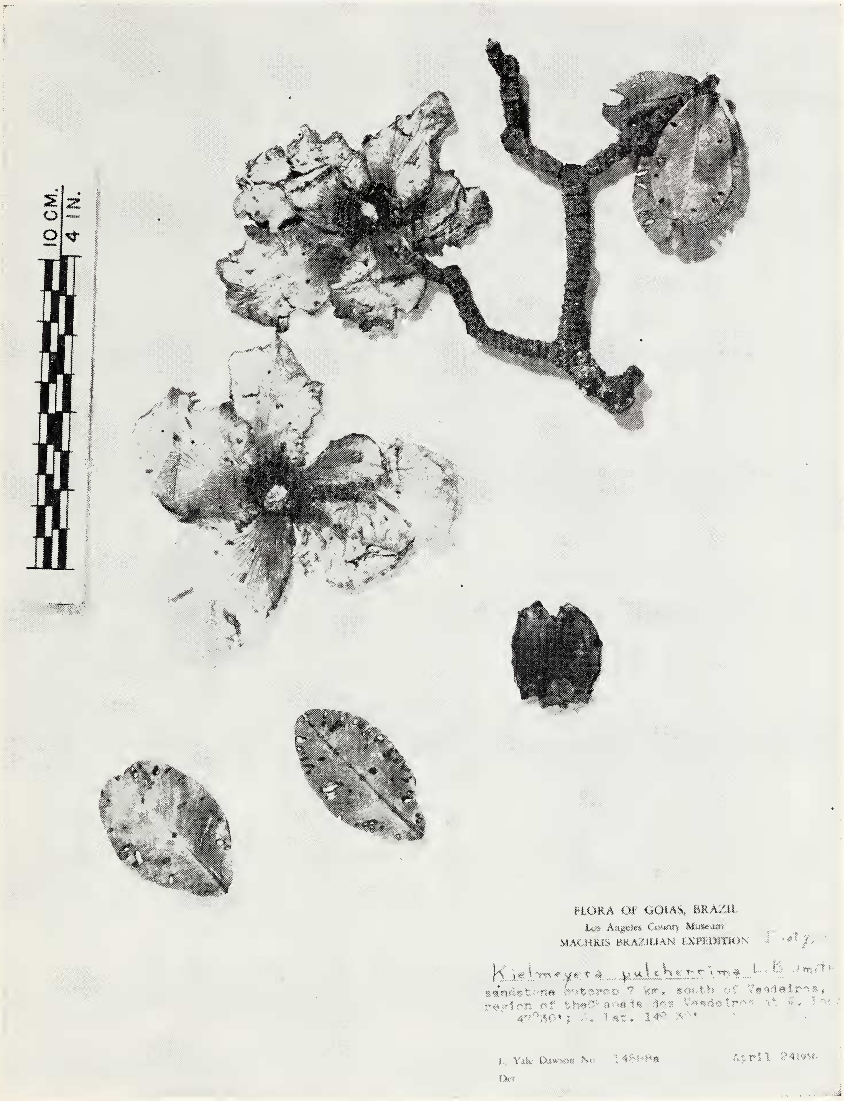
References: L. Radlkofer, Fl. Brasiliensis 13(3): 225-658. 1892-1900. Pflanzenreich IV. Fam. 165: 1-1539. 1931-34.

THEACEAE (supplement)

Kielmeyera pulcherrima L. B. Smith, sp. nov. Fig. 3

A *K. rubriflora* Camb. et *K. speciosa* St.-Hil., cuibus affinis, foliis verticillatis, floribus ad apices ramorum solitariis sessilibusque differt.

Branching shrub; branches opposite, suberose-corticate, densely whitish-pubescent at the apices, soon glabrous below; leaves sessile, elliptic to obovate, broadly rounded at base and apex, frequently retuse, to 55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FLORA OF GOIAS, BRAZIL
Los Angeles County Museum
MACHRIS BRAZILIAN EXPEDITION
Kielmeyera pulcherrima L. B. Smith

Fig. 3. *Kielmeyera pulcherrima* sp. nov. An isotype specimen.

mm. long and 35 mm. wide, flat, coriaceous, closely and strongly reticulate on both sides, white-tomentose on the midnerves beneath; flowers solitary and sessile at the ends of the branches, bracteate; bracts few, ovate, 5-6 mm. long, carinate, cuspidate, fulvous-velutinous; sepals very broadly ovate, distinctly unequal, 7-10 mm. long, fulvous-velutinous; petals obovate, strongly asymmetric, to 55 mm. long, rose, wholly glabrous; filaments slender; anthers oblong, eglandular; ovary ovoid, densely white-lanate.

Type: Museu Nacional do Brasil, Rio de Janeiro, collected on sandstone outcrop 7 km. south of Veadeiros, region of the Chapada dos Veadeiros at W. Long. 47° 30'; S. Lat. 14° 30', Goiás, Brazil, by E. Yale Dawson (No. 14588a). Isotypes in the United States National Museum and the Los Angeles County Museum.

This species appears to be unique in *Kielmeyera* on account of its verticillate leaves and solitary flowers, but the floral structure is quite typical. Its large rose petals must make it one of the most striking and beautiful shrubs of the region.

Kielmeyera variabilis Mart. 14486 Minas Gerais to Paraná and Goiás.

References: H. Wawra in Mart. Fl. Bras. 12(1): 261-334. 1886. Engler, Pflanzenfam. ed. 2, 21: 169, 172, 173. 1925 (under Guttiferae).

THEOPHRASTACEAE

Clavija integrifolia Mart. & Miq. 15032 Minas Gerais, Mato Grosso. The present determination is only tentative as it is not possible to solve certain taxonomic problems without much more material. Miquel in the Flora Brasiliensis (Pl. 26) shows a paracorolla as an appendage to the filament-tube in the staminate flower, while Mez in his monograph makes no mention of such a structure, and his illustrations of other species show appendages on the corolla but not on the filament-tube. The structure that Mez shows has been verified and there is a possibility that Miquel's illustration is an error due to faulty interpretation of dried material.

References: F. A. G. Miquel in Mart. Fl. Bras. 10: 269-324. 1856 (under Myrsineae). C. Mez, Pflanzenreich IV. 236a: 1-48. 1903.

TURNERACEAE

Piriqueta duarteana (Camb.) Urb. 14983 Central and northeastern Brazil.

Turnera incana Camb. 14980 Goiás.

References: I. Urban in Mart. Fl. Bras. 13(3): 85-170. 1883.

VELLOZIACEAE

Barbacenia flavida Goeth. & Henr. ex char. 14717 Minas Gerais.

Vellozia alexandrinae (Schomb.) Goeth. & Henr. vel aff. 14580; 14785 British Guiana, Venezuela.

Vellozia glauca Pohl 14434 Goiás, a variety in Mato Grosso.

Vellozia phalocarpa Pohl 14724 Endemic in Goiás.

? *Vellozia* sp. 14674 Past flowering. Genus uncertain, but plant shows similarities to *V. rhynchocarpa* Goeth. & Henr.

? *Vellozia* sp. 14680 Past flowering. A distinct species apparently related to number 14674.

? *Vellozia* sp. 14723 Past flowering.

References: M. Seubert in Mart. Fl. Bras. 3(1): 65-84. 1847. J. T. Henrard, Blumea 2: 339-383. 1937.

XYRIDACEAE

det. by Lyman B. Smith,
and by Robert J. Downs, Plant Industry Station,
U. S. Department of Agriculture, Beltsville, Maryland.

Xyrus dawsonii Smith & Downs, sp. nov. Figs. 4, 5

A *X. asperula* Mart., cui affinis, bracteis castaneis lucidisque, spicis paucifloris differt.

Bulbous; roots slender, almost filiform; leaves 20-27 cm. long, flat; sheaths merging with the blades, to 8 cm. long, linear then abruptly dilated at the extreme base and prominently nerved, glabrous above the suborbicular minutely ciliolate base, the ligule wanting; blades linear, 1 mm. wide, obliquely acute, obscurely nerved, finely tuberculate throughout; scape very slender, twisted, to 45 cm. high, terete, ecostate, densely and finely tuberculate; scape-sheath 8-9 cm. long, bladeless, closely enfolding the scape, acute; spike ellipsoid, 10 mm. long, 4-5 mm. in diameter, few-flowered; bracts elliptic, obtuse, entire or with a minute hyaline margin at apex, lustrous, castaneous, concolorous, coriaceous, the lower reduced, the median 8 mm. long; posterior sepals free, subequilateral, lanceolate, acute, 7 mm. long, the narrow keel entire and glabrous; petal-blades elliptic, 6 mm. long; anthers linear-sagittate, 2.5 mm. long; staminodes densely penicillate; placentae basal.

TYPE: Museu Nacional do Brasil, Rio de Janeiro, collected on wet, sandy margins of sandstone outcrop 7 km. south of Veadeiros, region of the Chapada dos Veadeiros at W. Long. 47° 30'; S. Lat. 14° 30', Goiás, Brazil, April 24, 1956, by E. Yale Dawson (No. 14624). Isotypes in the United States National Museum and the Los Angeles County Museum.

Xyris machrisiana Smith & Downs, sp. nov. Fig. 6, 7

A *X. simulante* Alb. Nilsson, cui affinis, foliis ciliatis, bracteis breviter carinatis, sepalis posterioribus breviter connatis differt.

Bulbous; leaves 8-15 cm. long, flat, densely white-ciliate; sheaths merging with the blades, 5 cm. long, linear then abruptly dilated and dark castaneous at base, the ligule minute; blades linear, 2 mm. wide, obliquely acute, the sides smooth, glabrous, the marginal nerves thickened; scape twisted, 44-55 cm. high, terete, obscurely costate, smooth, glabrous or obscurely ciliate; scape-sheath 7-10 cm. long, closely enfolding the scape, the blade very short; spike subglobose, 9-13 mm. long, rather manyflowered; bracts elliptic, obtuse, strongly carinate toward apex, reddish brown with a narrow white lacerate margin at apex, sublustrous, the basal somewhat reduced, the median 7 mm. long, the dorsal area very obscure or wanting; anterior sepal enclosed by the posterior, enfolding the

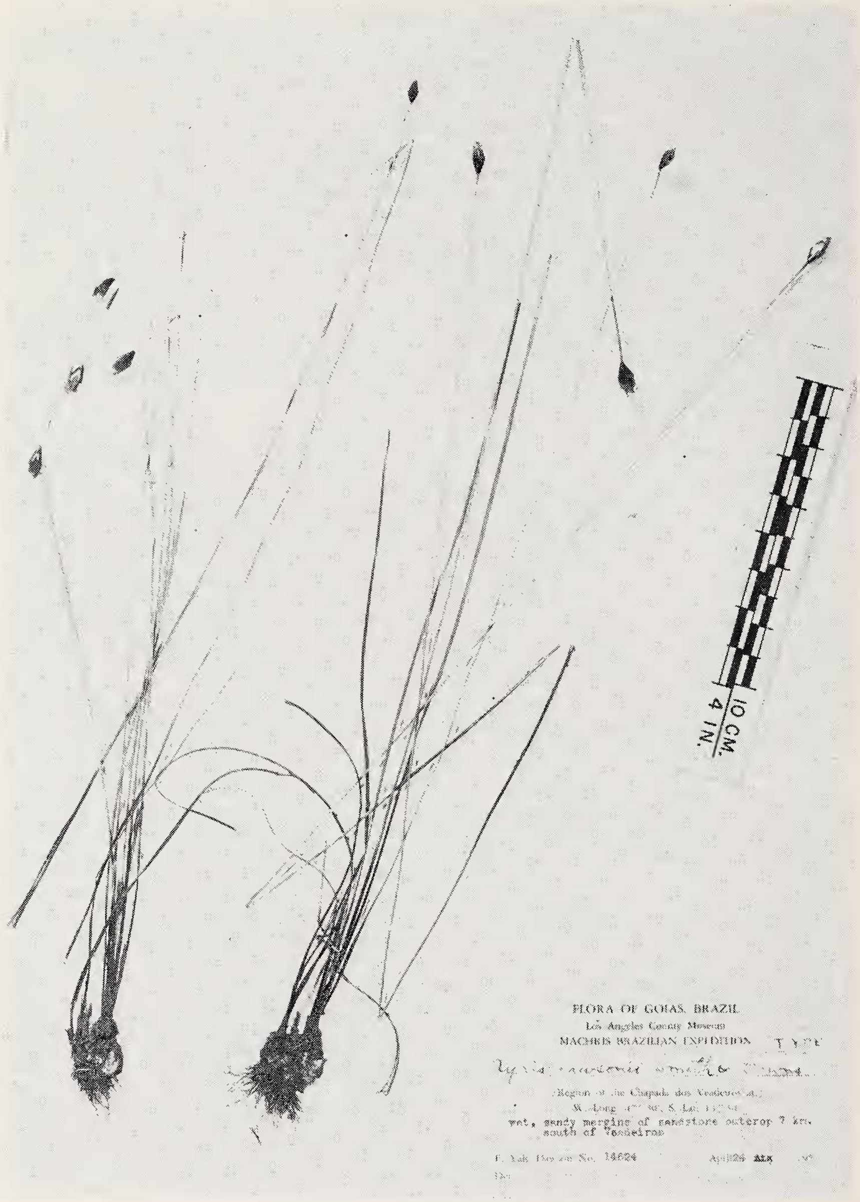
10 CM.
4 IN.
FLORA OF GOIAS, BRAZIL
Los Angeles County Museum
MACHRIS BRAZILIAN EXPEDITION
TYPE
wet, sandy margins of sandstone outcrop 7 km.
south of Veadeiros
14624

Fig. 4. *Xyris dawsonii* sp. nov. The holotype specimen.

young corolla; posterior sepals short-connate, lanceolate, acute, 8 mm. long, the keel white-fimbriate toward apex; petal-blades suborbicular, 5 mm. long; anthers linear-sagittate, 2 mm. long; ovary 4 mm. long; placentae basal.

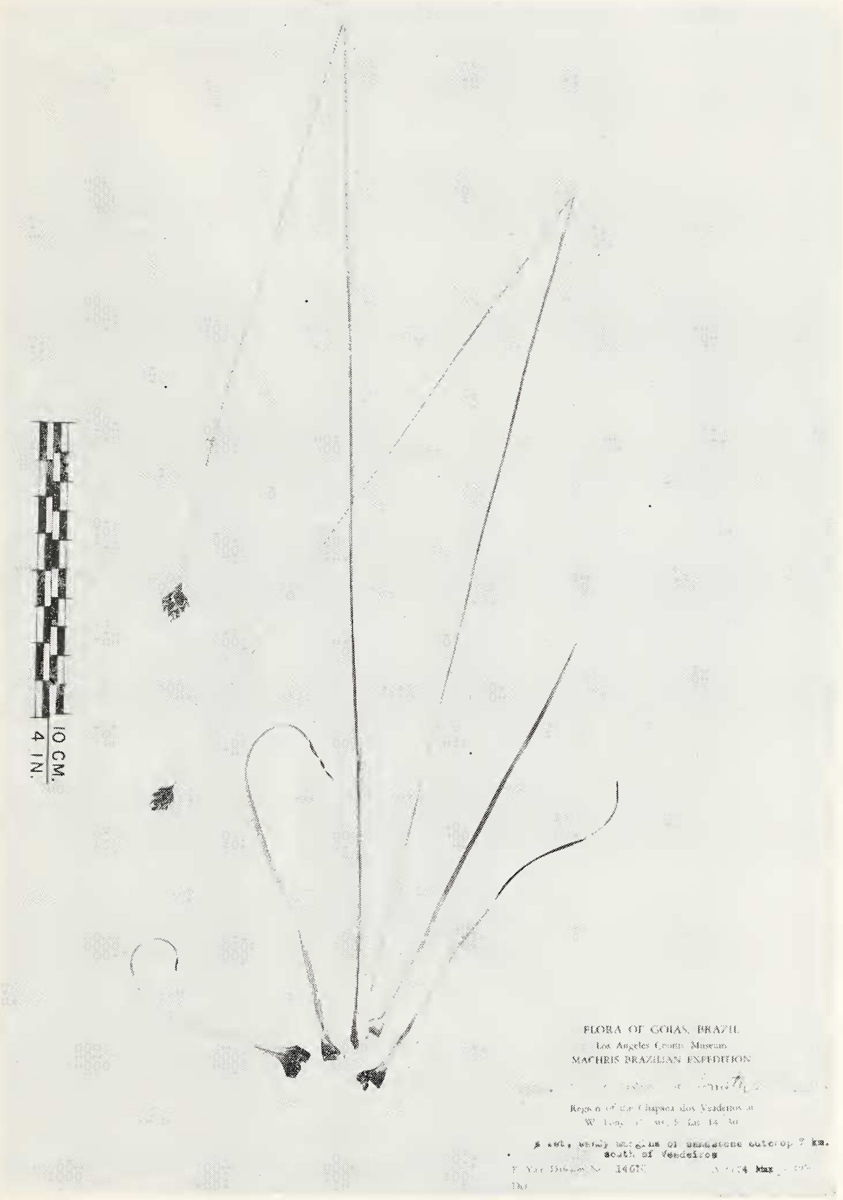
10 CM.
4 IN.
FLORA OF GOIAS, BRAZIL
Los Angeles County Museum
MACHRIS BRAZILIAN EXPEDITION
Region of the Chapada dos Veadeiros at
south of Veadeiros

Fig. 5 *Xyris machrisiana* sp. nov. An isotype specimen.

TYPE: Museu Nacional do Brasil, Rio de Janeiro, collected on wet, sandy margins of sandstone outcrop 7 km. south of Veadeiros, region of Chapada dos Veadeiros at W. Long. 47° 30'; S. Lat. 14° 30', Goiás, Brazil, April 24, 1956, by E. Yale Dawson (No. 14610). Isotypes in the U. S. National Museum and the Los Angeles County Museum.

Xyris aff. *metallica* Kl. ex Seubert 14238 Leaves lacking, identification uncertain.

Xyris savanensis Miq. var. *savanensis* 14627 South America south to Paraguay and northern Argentina.

Xyris tenella Kunth var. *tenella* 14641 São Paulo and Paraná to Mato Grosso and Paraguay.

Reference: G. Malme, Arkiv Bot. 13(3): 1-103. 1913.

ZINGIBERACEAE

Costus aff. *spiralis* (Jacq.) Roscoe 14941 Species not in Pflanzenreich.

Renealmia goyazensis K. Schum. 15223 Described from Goiás without further locality.

Reference: K. Schumann, Pflanzenreich IV. Fam. 46: 1-458. 1904.

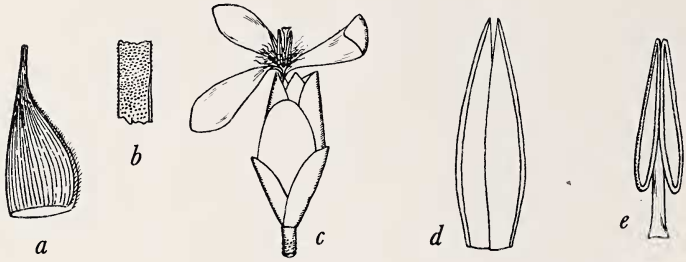

Fig. 6. *Xyris dawsonii* sp. nov. a. Base of leaf, × 2; b. apex of sheath, × 4; c. spike, × 2; d. posterior sepals, × 5; e. stamen, × 10.

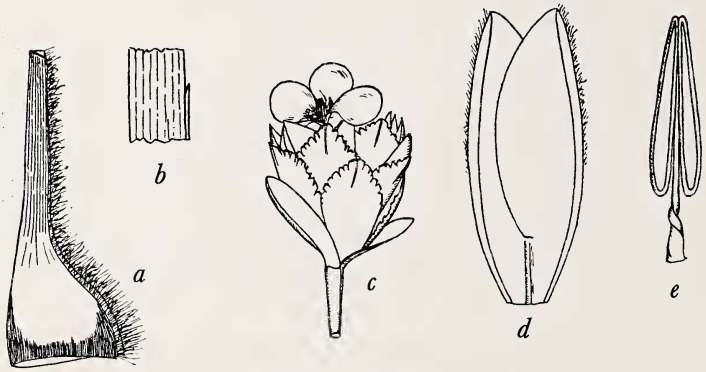

Fig. 7. *Xyris machrisiana* sp. nov. a. Base of leaf, × 2; b. apex of sheath with ligule, × 4; c. spike, × 2; d. posterior sepals, × 5; e. stamen, × 10.